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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Teruie Takemasu

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EXAMINER

DEFRANK, JOSEPH S

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/575,550	Applicant(s) TAKEMASU ET AL.	
	Examiner JOSEPH DEFRANK	Art Unit 3724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to the amendment filed on 8/20/08. Claims 13-30 are pending.
2. The specification was received 8/20/08. The new specification is acceptable.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 13-20, 22, and 24-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toshio et al. (JP 03-216233; as previously cited; hereafter Toshio) in view of Ishii (JP 9-57696; as previously cited).
5. With respect to claim 13, Toshio discloses a boring device comprising: a boring tool (a); a guide for restricting a moving direction of said boring tool (c); a vibrator (f) for applying vibrations to said boring tool to make said boring tool jump, said vibrator and said boring tool being discrete members unattached to each other such that said boring tool jumps and separates from said vibrator when said vibrator applies the vibrations to said boring tool; and a float retention member (b) for retaining said boring tool in a floating state at a specified position, and for generating a restoration force to return said boring tool at least to a position where said boring tool contacts said vibrator when said boring tool is displaced from the specified position. Examiner notes that figure 1b clearly discloses the boring tool and the vibrating members being discrete members that are unattached. Although they are in contact, there is no screw or other fastener holding the vibrator to the tool. The vibrator is wedged between the press (g) and the

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tool (a). As shown in figures 3a-3c, the punch moves without the vibrator. Toshio does not disclose the vibrations being ultrasonic vibrations. Ishii discloses a punch press system where ultrasonic vibrations are transmitted to the punch in order to create a plurality of small impacts while the punch is going through the workpiece (see previously provided translated abstract). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the vibration creating assembly (f) of Toshio to create ultrasonic vibrations in view of the teachings of Ishii in order to create a plurality of impacts at the punch site on the workpiece. Further examiner notes, that the purpose of providing the vibrations to the tool of Toshio is to spread out the impact over a number of impacts instead of one straight through punch. Increasing the frequency merely increases the number of impacts in one through stroke.

6. With respect to claims 14-18, the modified punch of Toshio discloses the float retention member (b) being operable to return the boring tool to the specified position when said boring tool is displaced from the specified position, the boring device further comprising a pressing device (g) for pressing said vibrator towards said boring tool, and the vibrator being operable to repeatedly apply the ultrasonic vibrations to said boring tool.

7. With respect to claim 20, the modified punch of Toshio discloses the boring tool comprising a punch (a) having a head and a processing portion to be applied against a workpiece (d), said guide (c) having a guide hole for guiding said head of said punch therein.

8. With respect to claims 19 and 21, the modified punch of Toshio does not disclose the punch having a spherical surface for contacting said vibrator. It would have been an obvious matter of design choice to make the different portions of the punch of whatever form or shape was desired or expedient. A change in form or shape is generally recognized as being within the level of ordinary skill in the art, absent any showing of unexpected results. *In re Dailey et al.*, 149 USPQ 47. In this case, the shape of the head of the punch is not a factor in transferring the ultrasonic vibrations from the vibrator to the punch. Any shape, as long as there is a contacting surface, will transfer the vibrations.

9. With respect to claim 24, Toshio discloses a boring method of boring an object (d), said method comprising: retaining a boring tool (a) in a floating state (with springs b) at a specified position inside a guide (c) that restricts a moving direction of the boring tool; applying vibrations to the boring tool using a vibrator (f) to displace the boring tool and make the boring tool jump towards the object to be bored, the vibrator and the boring tool being discrete members unattached to each other such that the boring tool jumps and separates from the vibrator during said applying of the vibrations to the boring tool by the vibrator; making the boring tool strike the object to be bored due, at least in part, to said applying of the vibrations; and returning the boring tool having been displaced from the specified position at least up to a position where the boring tool comes into contact with the vibrator. Toshio does not disclose the vibrations being ultrasonic vibrations. Ishii discloses a punch press system where ultrasonic vibrations are transmitted to the punch in order to create a plurality of small impacts while the

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punch is going through the workpiece (see previously provided translated abstract). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the vibration creating assembly (f) of Toshio to create ultrasonic vibrations in view of the teachings of Ishii in order to create a plurality of impacts at the punch site on the workpiece.

10. With respect to claim 25, Toshio discloses the step of returning comprises returning the boring tool having been displaced from the specified position to the specified position. Figures 3a-3c represent half of a stroke, the springs (b) then push the punch back into the position seen in figure 3a after the pressure from the press (g) has been removed.

11. With respect to claim 27, the modified method of Toshio discloses the method further comprising pressing the boring tool towards to the object (using press g) during said applying of the ultrasonic vibrations to the boring tool using the vibrator.

12. With respect to claims 26, 28, and 29, the modified method of Toshio discloses applying the ultrasonic vibrations comprises repeatedly applying the ultrasonic vibrations to the boring tool. There is more than one vibration per stroke.

13. With respect to claim 30, Toshio does not disclose applying the vibrations on a spherical surface of the boring tool. It would have been an obvious matter of design choice to make the different portions of the punch of whatever form or shape was desired or expedient. A change in form or shape is generally recognized as being within the level of ordinary skill in the art, absent any showing of unexpected results. *In re Dailey et al.*, 149 USPQ 47. In this case, the shape of the head of the punch is not a

factor in transferring the ultrasonic vibrations from the vibrator to the punch. Any shape, as long as there is a contacting surface, will transfer the vibrations.

14. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toshio in view of Ishii as applied to claim 20 above, and further in view of either Henderson et al. (US 6,305,258) or Masatoshi et al. (JP 61-033795; as cited in IDS).

Toshio discloses the float retention member (b) comprising a spring (b). Toshio does not disclose the spring retained within said guide hole. Examiner notes that there are many configurations for springs in punch press dies. Both the art of Henderson et al. and Masatoshi et al. disclose punches having retention springs contained within the guide hole of the punch; see figure 2 of Henderson et al. and figure 1 of Masatoshi et al. All the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the guide hole and retention spring of Toshio to have a setup where the guide spring is located within the retention hole as taught by Henderson et al. or Masatoshi et al. This is a well known configuration in the punching arts and no new and unexpected result occurs from this sort of repositioning.

15. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toshio in view of Ishii as applied to claim 20 above, and further in view of Dickerman (US 2,404,793).

Toshio discloses the boring device further comprising a die (e) having a holding surface for holding a workpiece (d) against said boring tool, said die having a boring hole extending there through. Toshio does not disclose the boring hole being tapered outwardly away from said holding surface. Examiner notes that the technique of providing a tapered hole in the female die of a punch press is well known in the art as it provides a clearer path for scrap to exit the die. Dickerman discloses a punch and a mating die (2) having a hole with a taper angle (18). The shape of the hole with the taper helps to prevent galling and seizing during the punching process (column 2 lines 48-53). It would have been obvious to a person having ordinary skill in the art to modify the boring hole of Toshio to have a bottom taper to allow for easy scrap removal and thus reduce the risk of galling and seizing in view of the teachings of Dickerman.

Response to Arguments

16. Applicant's arguments filed with respect to claims 13-30 have been fully considered but they are not persuasive.

17. Applicant argues that Toshio does not teach a vibrator and a boring tool being discrete members unattached to each other as is required by new independent claims 13 and 24. Examiner respectfully disagrees. Figure 1b of Toshio discloses the punch, the vibrator, and the press being three distinct objects. There are no connections or fasteners providing any of the members being attached to another member. The vibrator is wedged between the press and the punch head. Anywhere a vibration occurs and there isn't a direct connection (i.e. a screw or a weld) there will be some degree of jumping present. Further, examiner notes that the setup of figure 1a where

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the press directly presses the punch head and the vibrations come from underneath also reads on the claim language. In this case, the two are completely separate entities.

18. Applicant argues that the modifying the art of Toshio to operate with the ultrasonic vibrations of Ishii is not valid because the art of Toshio teaches away from having ultrasonic vibrations since the punch of Toshio vibrates at most at about 100Hz. Applicant further states that "it is known that in punching devices such as those used in the Toshio reference, if the frequency of vibration is as low as several hundred Hz, then the tools including the punch and the die will be vibrated sympathetically, causing damage to the tools. Examiner respectfully disagrees that this excludes the punch of Toshio from being modified to oscillate via ultrasonic waves. Examiner notes that the ultrasonic spectrum begins at about 20kHz, well outside of the "sympathetic" (resonant) vibratory range of a simple spring system. Further, Toshio recognizes the benefit of increasing the number of hits (or increasing the frequency of the driver) during one stroke of the punch. Toshio states that while under vibration, "forces divided into fine displacements are given at plural times to punch the blank. Consequently, the residual strain of the formed part is reduced after it is punched. The punched section is improved in accuracy, too." The more vibrations, the more the force of each impact is reduced during each stroke. There is no reason that the punch of Toshio cannot be modified to accept ultrasonic vibrations. Examiner further notes, that in the event resonant frequency does occur at an ultrasonic vibration, a different spring can (and

logically would) be applied in the modification. This is within the skill set of one skilled in the art.

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art of Hachikawa et al., Wada et al., Saha et al., and Calkins are noted as considered pertinent to the applicant's disclosure.

20. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSEPH DEFRANK whose telephone number is (571)270-3512. The examiner can normally be reached on Monday - Thursday; 9am-6pm EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer Ashley can be reached on (571) 272-4502. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason Daniel Prone/
Primary Examiner, Art Unit 3724

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12/2/08
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